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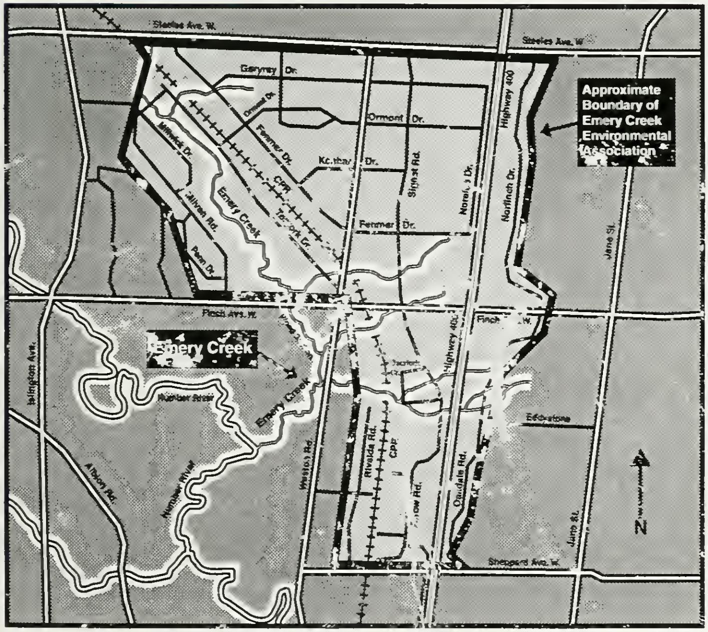
ENVIRONMENTAL MANAGEMENT SYSTEMS

ISO 14000 Guidance Document for a Business Community



Emery Creek
Environmental Association

Ministry of the Environment

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ISO 14000 Guidance Document for a Business Community

October 1998

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Ministry of the Environment
and Emery Creek Environmental Association

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PREFACE

ISO 14000 Guidance Document for the Emery Creek Environmental Association

Environmental management systems can help your company enhance its environmental performance while improving its productivity and community and business relations. This publication will assist small and medium enterprises in the Emery Creek Environmental Association (ECEA) to learn about the usefulness of the ISO 14000 Environmental Management System (EMS) in addressing their common environmental challenges. ECEA businesses, belonging to a wide range of industrial and commercial sectors, are located in an eco-industrial park setting in a geographical area surrounding the Emery Creek in north Toronto. Common environmental concerns centre around the need to improve the quality of the receiving water in the creek as it is impacted by storm sewer flows contaminated by effluent discharges from local industrial and commercial establishments.

In keeping with the ECEA motto of "businesses helping businesses", the Guidance Document (GD) in its organization and content encourages companies to coordinate their efforts and pool their resources in establishing EMS systems and eventually working towards achieving ISO 14000 registration at their own pace. Working in a group setting, the cost of obtaining external help if needed for registration and annual audits will be lower for each participant.

Compared to other ISO 14000 publications, this GD has the following unique features:

- Answers in a simple language some of the commonly asked questions about EMS's and ISO 14000, and why a company should establish an EMS for its business.
- Hands-on workbook type format with checklists, simple flowdiagrams and pull-out tables make the document user friendly. The reader can add more material when needed as learning processes progresses.
- Builds on a company's existing EMS and on user's previous knowledge.
- Can be used as a first-step introductory guide or a source of references for more advanced learning and implementation for self-certification. The user has a choice; do it yourself, get involved in a group, or if required get external help. It informs the user where to get professional help for speedy implementation; and how to make use of outside services in the most cost-effective manner.
- Examples of successful solutions to environmental problems as provided by local businesses are included.
- Staff from a number of ECEA companies participated in focus group discussions and offered valuable and practical input which was included.
- Lists performance indicators for evaluating a company's environmental management.

ECEA's Resource Centre provides current information on environmental issues to its members and its Executive Director performs a valuable function of organizing and coordinating the Association's activities. Environmental activities of ECEA may be a useful model for other similar business communities. They will find this GD to be of particular interest and value since its flexible approach can be adapted to their needs.

Benefits to Businesses of Establishing their ISO 14000 EMS

The ISO 14000 or an equivalent EMS will help a company to identify opportunities for resource conservation, cost saving and efficiency and productivity; which in turn should improve a company's "bottom line ". The exercise of reviewing, analyzing, formulating and implementing environmental policies, procedure and practices required for an ISO 14000 registration will raise a company's awareness of the impact of its operations and products on the environment and enhance its business competitiveness while helping to protect the environment. Some of the other benefits accruing from an ISO 14000 registration are:

- conforming with regulations is facilitated and the cost of compliance is reduced as potentially "risky" situations are recognized and addressed,
- annual reviews and audits render efficiency and productivity improvements an on-going dynamic exercise,
- a company's environmental responsibility can be more easily demonstrated,
- a good corporate image and reputation with the public, community groups, investors, bankers, insurance companies, and regulatory authorities are created,
- clear lines of environmental accountability and responsibility within a company's organization can be created.

We hope and trust that the readers and the users of this guidance document will find it useful, informative and above all practical. We welcome your input. Please send your comments on this publication or requests for further information on the Ministry's work related to Environmental Management Systems to Parkash Mahant, Environmental Partnerships Branch, Ministry of the Environment, 2 St. Clair Avenue West, 14th Floor, Toronto, Ontario, M4V 1L5. Fax. (416) 327-1261, E-mail: mahantpa@ene.gov.on.ca

Copies of this document are available from the following sources;

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- Canadian Centre for Pollution Prevention, 100 Charlotte Street, Sarnia, Ontario, N7T 4R2. Tel. (519) 337-3423, Fax. (519) 337-3486, E-mail: c2p2@sarnia.com
- Information Officer, Environmental Partnerships Branch, MOE, 2 St. Clair Avenue West, 14th Floor, Toronto, Ontario, M4V 1L5. Tel. (416) 327-7721, Fax. (416) 327-1261. Copies of other ISO 14000 Guides are also available.

ISO 14000 Implementation Guides

The Environmental Partnership Branch (EPB) of the Ministry of the Environment, with the co-operation of business associations, has developed sector specific ISO 14000 implementation guides to promote the adoption of environmental management systems by key industrial and commercial sectors in Ontario. Encouraging industries and other businesses to voluntarily institute ISO 14000 or equivalent standards in their operations is an integral part of the Ministry's approach to environmental stewardship by the business community.

The Environmental Partnership Branch, in partnership with industry associations such as the Alliance of Manufacturers and Exporters Canada and the Emery Creek Environmental Association (ECEA), has supported group training of companies by consultants who have the necessary expertise in ISO 14000. The group training setting is very cost-effective for staff from small and medium size enterprises (SME's). Some of these companies have already obtained ISO 14000 registration while others are working towards it. The Ministry encourages and strongly supports the adoption of environmental management systems by industrial, commercial and institutional sectors in Ontario.

The ISO 14000 implementation guides were found to be valuable and timely reference and training tools and workbooks at group workshops organized by industry associations. Each guide has been prepared by an expert consultant with a useful input from focus groups of environmental staff and potential users from participating companies. Sectors for which ISO 14000 guides have been developed include Automotive Parts Manufacturing, Metal Finishing, Metal Fabrication, Vinyl Processing, and Corrugated Paper Packaging.

Acknowledgments

This document was prepared by the Canadian Centre for Pollution Prevention with assistance from John Wolfe of Management Horizons and Cheryl Gonsalves of ECEA. We would like to thank those members of ECEA who participated in focus group workshops on this project and provided very useful and practical input into the Guidance Document. We also thank Fred Granek, Manager of the Ministry's Pollution Prevention office, and Henry Vens, Chairman of the ECEA 's Board of Directors, for their helpful comments..

Disclaimer

The views and ideas expressed in this document are those of the authors and do not necessarily reflect the views and policies of the Ontario Ministry of the Environment. Mention of trade names, commercial products or supplier names does not constitute endorsement or recommendations for use by the Ministry.

Similarly, the generic methodolgies and procedures presented by the authors of this guidance document do not represent recommendations for implementation at specific sites. The Ministyry and the authors are not responsible for such implemetation. Users of information in this document should decide for themselves or seek expert advice to determine what is appropriate and applicable to their respective operations.

Parkash Mahant
Environmental Partnerships Branch
Ministry of the Environment
October 1998

ENVIRONMENTAL MANAGEMENT SYSTEMS

ISO 14000 Guidance Document
for a Business Community

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1. Introduction

Environmental Management Systems for companies in a business community

Get Ready In today's business environment, every company must be able to demonstrate that it has taken all reasonable steps to manage its operations without adversely affecting the environment.

Get ready to reach your company's environmental objectives by ensuring your management systems are up to the task. Experience has demonstrated that the cost of cleaning up far exceeds a prudent operation that ensures its environmental impacts are minimized, if not eliminated. Having a well functioning Environmental Management System (EMS) is the minimum expected of business today. Use the tool that will provide your company with the EMS it needs to reach its business objectives today and in the future.

Get Set All Environmental Management Systems, while designed to suit the individual business, will involve seven basic components:

- A written policy statement
- Identification of environmental aspects and impacts of operations, products and services
- Setting targets and objectives for self-improvement
- Establishing procedures and plans to meet the targets and objectives
- Conducting training programs and assigning responsibilities
- Conducting periodic audits and reviews
- Internal and external communication of environmental information.

Get set by identifying what basic components are in place and those which need improvement.

Go **Go for it!** Establish a phased implementation plan to achieve an EMS for your company that:

- will capture the revenue potential from elimination of wastes
- is based on practical, proven cost effective approaches that align the organization's EMS with international standards (ISO14000) and
- facilitates integration of the EMS with product and services management systems (ISO 9000).
- will assist in preparation of report to sell EMS development activities to management.

This approach will help reduce environmental costs, turn them into revenue, enable the use of environmental achievements for business promotion, and improve relationships with bankers, shareholders, insurers, regulatory authorities, environmental groups and local communities.

NOTES

2. ISO 14000 - ISO 9000 - A Background

What it contains, how is it used, and what benefits will result

What are ISO 14000 / ISO 9000?

ISO 14000 is a series of Environmental Management standards and ISO 9000 is a series of Quality Management Systems standards, both developed by the International Standards Organization or "ISO" (see reference 5.3). The standard ISO 14001 applies to a company's Environmental Management System and references the company's environmental policies, environmental planning, resourcing, monitoring, and management review of the system.

To whom will ISO 14000 apply?

ISO 14000 is a series of voluntary standards for businesses of all sizes, especially small and medium sized business located anywhere in the world, including companies in both the manufacturing and service industries.

The ISO 14001 standard addresses management systems and continuous improvement tools. Actual performance levels, such as emission limits, are specifically excluded. Businesses set their own performance levels unless specified with regulations or other voluntary commitments to which the business subscribes.

Why would a company want to use an international standard?

Companies will use an international standard for different reasons. An organization may:

(1) wish to conduct business with large multinational corporations or government where registration with a standard is expected to become a condition of doing business through procurement bid requirements;
(2) be asked to do so by a valued customer,
(3) wish to demonstrate environmental leadership;
(4) use this standard as a tool to meet, streamline and simplify their management of environmental issues.
(5) wish to use the standard to implement a management system that facilitates continual improvement of both management and environmental performance while reducing costs

Why seek ISO 14001 certification?

ISO 14001 is expected to follow the growth of ISO 9000. The experience of ISO 9000 has shown a rapid rise in registration to the standard as it became the accepted norm for business. There are now over 150,000 organizations registered to these voluntary standards because business requires it. ISO 14001 is expected to follow the same trend for tendering for international contracts and for meeting clients' environmental standards.

Is occupational health and safety included?

Not specifically, however, the management of environment, health and safety performance are all based on the same set of management concepts and systems, therefore they are frequently managed together. ISO is developing similar standards in these areas and many organizations have integrated their environment, health and safety functions.

How will it compare with existing company systems that have been designed to assure compliance with federal, provincial and municipal environmental legal requirements?

An effective system for compliance with applicable laws and regulations is one component of an ISO 14001 EMS. An ISO 14001 system will, however, also have a number of "beyond compliance" aspects, including requirements for identification of significant environmental impacts; setting of impact-related goals; a pollution prevention management commitment and related objectives and targets; programs for voluntary commitments like industry codes of practice; and increased measurement, training and documentation.

How will ISO 14001 relate to government environmental requirements?

As a voluntary standard, it will assist organizational efforts to comply with regulations. ISO 14001 conformity may become an advantage / condition of qualifications for programs, as well as a relevant consideration of governmental environmental enforcement and procurement policies.

How much will it cost?

The costs of conformity, including initial system review, system improvement and independent third-party registration fees, will depend on the size and complexity of the organization and the caliber of its current EMS and quality systems.

Using this document and maximizing existing resources, a company with 50 employees can establish an EMS consistent with ISO 14001 at a cost of $10,000 to $20,000. To achieve ISO 14001 registration, a cost in the range of $20,000 to $80,000 can be expected, depending on the complexity of the business and the degree to which ISO 9000 is already established in the organization.

Benefits from EMS and ISO 14001 Certification

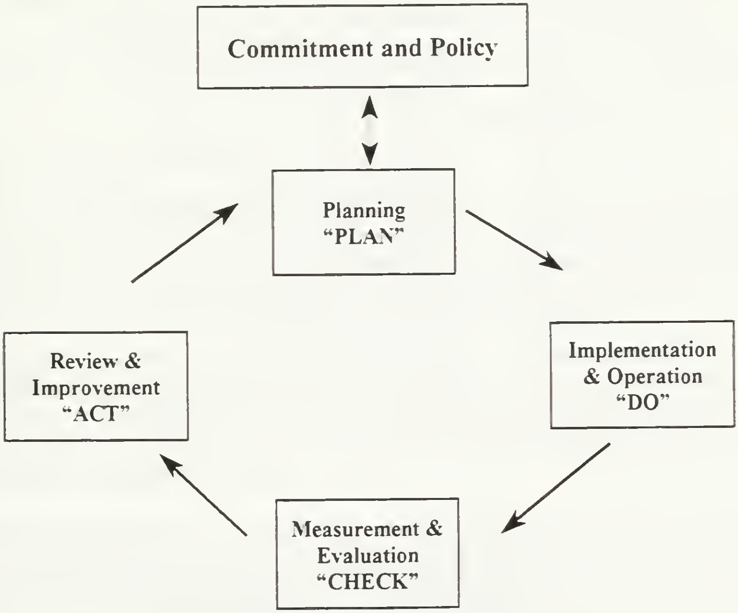
- Product marketability when certified ISO 14001
- Easier to demonstrate regulatory compliance
- Cost savings from pollution prevention and resource conservation
- Insurance and banking premium reductions potentials
- Demonstrated management responsibility for environmental performance.

How does ISO 9000 fit?

The idea behind the ISO 14000 series is to have standards applicable to corporate environmental issues that would work similar to and in tandem with the ISO 9000 standards for product quality assurance, under which certification is virtually a prerequisite to conducting international business transactions involving manufactured goods.

What management concept is used in ISO 14001 EMS?

ISO 14001 Standard is based on the application of the Quality Management **Plan-Do-Check-Act Cycle**. This improvement cycle starts with a policy, takes the process through planning, then through implementation / operation, through checking and corrective action and finally to management review before entering the continual improvement cycle again with the planning phase.


Commitment and Policy
Planning "PLAN"
Implementation & Operation "DO"
Measurement & Evaluation "CHECK"
Review & Improvement "ACT"

This cycle leads to continual improvement of the EMS system. The Plan-Do-Check-Act cycle is one that leads to continual improvement as opposed to the standard project-based implementation of environmental improvements. The latter type typically does not have a built in checking and improving mechanism for the management components.

What are the elements of an ISO 14001 EMS?

Environmental Management Systems are those management systems that address environmental issues in the businesses decision making processes and in the way they operate. Each company will have its own priorities and will adopt the systems at its own pace. The ISO 14001 standard offers a strategic approach to ensuring these systems are in place and the company management are continuously enhancing their ability to improve environmental performance. Critical ISO 14001 elements are:

Elements of ISO 14001 Environmental Management System Standard

4.1 General
4.2 Environmental policy
4.3 Planning **(PLAN)**
    4.3.1. Environmental aspects
    4.3.2. Legal and other requirements
    4.3.3. Objectives and targets
    4.3.4. Environmental management programs
4.4 Implementation and Operation **(DO)**
    4.4.1. Structure and responsibility
    4.4.2. Training, awareness and competence
    4.4.3. Communications
    4.4.4. Environmental management system documentation
    4.4.5. Document control
    4.4.6. Operational control
    4.4.7. Emergency preparedness and response
4.5 Checking and corrective action **(CHECK)**
    4.5.1. Monitoring and measurement
    4.5.2. Non-conformance and corrective & preventive action
    4.5.3. Records
    4.5.4. Environmental management system audit
4.6. Management Review **(ACT)**

Environmental Management Systems will assist you to:

- save money by conserving resources and materials
- meet customers' environmental expectations
- meet banks' lending criteria
- limit aspects of operations that are risky
- obtain insurance at lower costs
- maintain good community and public relations
- demonstrate proof of your operating actions

3. Implementation

A Phased Approach

Implementation can be done using the workbook and checklist (Section 4) of this guidance document as a self-help reference. This allows the company to set and monitor its own timetable for the implementation of each phase of the EMS. The phases are typically done in the following sequence:

Policy:	Establish management commitment.
Plan:	Conduct a Gap Analysis to evaluate what will be needed for an effective EMS.
Do:	Build the management system and supporting documentation and train staff where appropriate.
Check:	Monitor performance and conduct an audit of the EMS to ensure all elements are in place, and take corrective actions on deficiencies.
Act:	Measure your performance and evaluate if certification is appropriate.

Details for these steps follow:

This process can be facilitated by the pooling of resources as a cooperative with other industries in the community, or by coordinating with businesses in the same industrial sector. For success, it is important that action is based on sound investment decisions, and that each step is taken within the resources available to the business.

Existing Business Systems - Business Management Systems In Place

All companies operate with management systems in place to control those issues that are fundamentally important to the success of the operation. These typically include financial and cost management systems, quality of product controls, safety and health management systems for employees.

Environmental issues have become increasingly costly and important for the short term or long term competitiveness of the business. Many companies are changing the way they do business to move away from toxic substances and other substance of concern, such as ozone depleting substances, to reduce the regulatory burden and to save the cost of disposal of hazardous materials. This has given the leading companies a competitive advantage as they adopt more efficient processes and practices that reduce wastes of resources (such as time, cost of disposal, and more efficient operations).

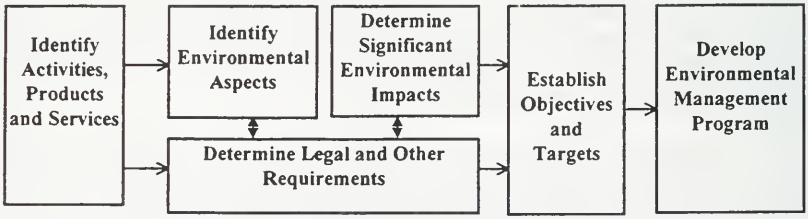
POLICY - *a strong commitment from management*
The policy commits your company to achieve a standard of environmental performance and sets the manner on how it will be achieved.

If your corporate culture doesn't support an environmental protection ethic you may need to do an internal business case analysis to help senior management justify the effort. Use the following to justify why implementing an ISO 14001 compatible EMS can prove beneficial to the company:

- Market access, are your customers asking, or requiring that you have an EMS
- Compliance Management and contribution to Due Diligence
- Relations with regulators, bankers, insurers, employees, local community, and environmental groups
- Risk reduction
- Access to capital
- Process efficiencies, resource utilization, energy use, waste handling
- Environmental performance
- Overall management

A statement of a sample environmental policy is provided on page 34.

PLAN - *Find out what is in place, what is not a 'Gap Analysis' and establish plans.*
The key to successful implementation of an ISO 14001 based environmental management system is to do it in a logical sequence, building on existing systems, and to take one step at a time. The first step is normally to determine your strengths and your weaknesses through a quick analysis of what exists and what is missing. This is commonly referred to as a Gap Analysis. Most organizations find that they have many of the components of an EMS during this exercise. However they also usually find that the system is not documented, there are few targets and objectives and most if not all of the focus is on regulatory compliance.


Identify Activities, Products and Services
Identify Environmental Aspects
Determine Significant Environmental Impacts
Determine Legal and Other Requirements
Establish Objectives and Targets
Develop Environmental Management Program

Planning elements that establish plans for the organization have been documented for many industry sectors. (see Section 5.2.6) They include:

Aspects & Impacts -	*Understanding what aspects of the business have an environmental impact will allow the company to formulate successful strategies to reduce its impact*
Regulations -	*Knowing what environmental laws affect the business is critical to ensuring compliance.*
Goals -	*Defining environmental objectives and targets will enable a company to chart a course to improved environmental and cost performance.*
Programs -	*Developing environmental management plans and programs will help to achieve goals and objectives*

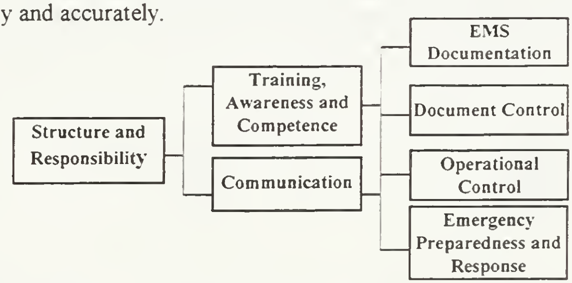
DO (Implementation & Operation) - Building the Management System

This guidance document is designed as a workbook (section 4) to be used to implement your EMS. It contains checklists and reference spaces for each implementation step and all the key ISO 14001 requirements. You don't have to commit to ISO 14001 third party registration at this early stage but if at a later date there is a business case for registration you will have a system that meets the requirements.

You may wish to combine your resources through a facilitated activity by an association, community, industry sector so you share costs of expertise and information, and you don't reinvent the wheel. Encourage first steps that will provide early successes and allow savings to be allocated to longer term investments. You may also wish to develop environmental performance metrics, i.e., management and operational performance objectives and targets in areas of common interest to your business community.

Knowing what resources are being applied to environmental issues ensures best allocation of scarce resources (dollars, employees' time, materials, ...)

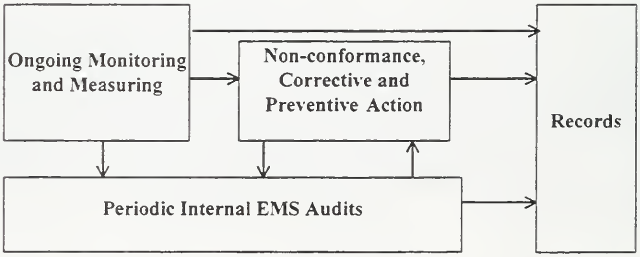
- Train personnel as appropriate to needs and roles
- Assign responsibilities appropriate to authority, skills and resources
- Establish communication and awareness processes
- Establish and maintain documentation and records system.
- If it is not written down, management cannot be confident it will be implemented consistently and accurately.


Structure and Responsibility
Training, Awareness and Competence
Communication
EMS Documentation
Document Control
Operational Control
Emergency Preparedness and Response

CHECK (Monitoring, Measuring and Corrective Action)

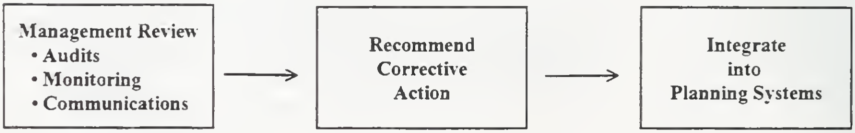
Remember if you don't measure it you can't manage it!
Examples of environmental performance indicators that your organization may wish to track can be found on pages 29, 30, and 33.

- Controls exist to maintain the integrity of operations with the potential to cause environmental impact
- Monitoring and measuring procedures are necessary to know what is occurring both in terms of the EMS itself and actual environmental performance vs. objectives and targets.
- Procedures are needed for correcting errors must address the root cause to prevent a recurrence.
- Preparations for preventing and responding to an environmental emergency such as a spill.
- Training of employees is essential so that they are capable of monitoring, controlling and taking actions to improve environmental performance.
- Keeping people informed (internal as well as external to the company) avoids surprises and adverse reactions.


Ongoing Monitoring and Measuring
Non-conformance, Corrective and Preventive Action
Records
Periodic Internal EMS Audits

ACT (Management Review and Continual Improvement)

Management reviews the EMS for opportunities to continuously improve the management systems. Details of ISO 14000 compared to ISO 9000 are shown in section 5.3 (References - ISO 14000). This demonstrates how management systems for "products" are closely aligned with environmental aspects and impacts.



4. Workbook and Checklist

ISO 14001 - The International Standard for Environmental Management Systems

The Checklist is a working document to identify those management systems already in place, those that need to be addressed and a reference to progress towards a ISO 14001 compatible EMS.

The 'Standard' column gives you an ISO 14001 Standard reference number, title, and a reference to a case study available in the community resource centre.

The 'Explanation' column explains the scope of the management system, with the bold text being the starting point.

The 'Checklist' column provides a series of questions defining the management systems needed to reach ISO 14001 certification. The bold text being the starting point.

The 'Where Are You Now?' column provides an easy reference of your current status. Tick those questions completed and note dates for completion and who is responsible.

Document the completed element in the space provided on the 'Reference Page'.

STEP 1 - ***'Get Ready / Gap Analysis'***
Use the checklist's highlighted sections to provide the basis for an EMS suitable for your organization. Use the column 'Where are you now?' to note your current status and the reference section to document policies / targets / results This can be easily updated as your EMS becomes more complete and comprehensive.

STEP 2 - ***'Get Set / Plan for EMS Consistent with ISO 14001 Standard'***
To reach an EMS consistent with ISO 14001, the full text would need to be completed and the 'EMS Reference' page should be considered your documented EMS for current and future reference.

STEP 3 - ***'Go / ISO 14001 Registration When Needed'***
While this checklist will provide the basic requirements for an ISO 14001 based EMS, it would be advisable to seek confirmation through the resources provided in the reference Section 6. It will be important to ensure that the questions are fully understood and documentation is complete. ISO 14001 provides companies the option to "self-declare" ISO 14001 compatible EMS.

EMS / ISO 14001 Implementation Planning and Tracking Form

Use this form to schedule the review and implementation of your EMS.

	Element	Description	1	2	3	4	5	6	7	8	9	10	11	12	Complete
PLAN	4.1	General Requirements	x												
	4.2	Environmental Management Policy	x												
	4.3.1	Environmental Aspects	x	x	x										
	4.3.2	Regulations / Legal and Other	x	x	x	x	x								✓
	4.3.3	Objectives and Targets	x	x	x										
	4.3.4	Env. Management Program	x	x	x	x									
DO	4.4.1	Structure and Responsibility			x	x	x								
	4.4.2	Training				x	x	x							
	4 4 3	Communication					x	x	x						
	4.4.4	Procedures / General Requirements						x	x	x					
	4.4.5	Documentation Control							x	x	x				
	4.4.6	Environmental Controls						x	x	x	x	x			
	4.4.7	Emergency Preparedness	x	x	x	x	x	x	x	x	x	x	x		
CHECK	4.5.1	Monitoring and Measurement										x	x	x	
	4.5.2	Control of Non-Compliance											x	x	
	4.5.3	Records											x	x	
	4.5.4	EMS Audit												x	
ACT	4.6	Management Review												x	

Company ____________________ **Review Dates:** ____________

ACTIONS:

1. Complete the 'Where Are You Now?' column using the questions in the 'Checklist' column.
2. Record your Management System on the 'Reference' page.

Standard	Explanation	Checklist	Where Are You Now?
4.1 **General Requirements**	All activities of the overall management function that determine the environmental policy, objectives & responsibilities.	The EMS should be as comprehensive as needed to meet the organization's environmental objectives.	☐ ☐ ☐
4.2 **Environmental Policy** *Example #1 Reynolds Aluminum (Page 22)*	**This document defines the accountability of top management to environmental performance.** It should be appropriate to the nature, scale and environmental impacts for the organization's activities, products and services. The policy commits your company to improving environmental performance beyond compliance. It must be documented, implemented and maintained.	**Does the environmental policy exist?** **Has it been defined and signed by top management?** Is the policy appropriate to the nature, scale and environmental impacts of the organization's activities, products and services? Does the policy include a commitment to continual improvement, pollution prevention, to comply with relevant environmental legislation and regulations and to comply with other requirements to which the organization subscribes? Does the policy provide a framework for setting and reviewing environmental performance objectives and targets? Has the policy been documented? Has the policy been implemented? Has the policy been maintained?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

REFERENCE: General Requirements	Future Need?	
		Who's Responsiblity: __________ Date Completed: __________

REFERENCE: Policy Statement	Future Need?	
		Who's Responsiblity: __________ Date Completed: __________

Standard	Explanation	Checklist	Where Are You Now?
4.3.1 Environmental Aspects *Example #2 Ontario Store Fixtures (Page 22)*	**Understanding how aspects of your business impact the environment will allow you to formulate successful strategies.** Aspects define those activities, products and services that have an impact on the environment during normal and abnormal conditions (e.g. Emergencies) You must establish and maintain procedures to identify the environmental aspects of your activities, products and services, (over which your organization has control or influence). You are expected to establish targets and objectives for those aspects that you determine have a significant impact on the environment. Aspects / Impacts: Air emissions / Toxic releases & smog Releases to Water - Sewer discharges / Water contamination Packaging / Landfill Combustion of fuels / climate change Storage tank leaks / Soils and ground water contamination Herbicide applications / Land and water contamination	**Do maintained procedures exist to identify on an ongoing basis environmental aspects of activities, products and services.** Have these aspects been assessed to determine which can have significant impact on the environment? Have aspects and related significant impacts been considered in setting environmental objectives such as anticipated technology change? Each process activity flow chart on the 'Reference' page should include: 1. Diagram of process flows. 2. List of inputs. 3. Identification of aspects. - Normal - Start up / Shut down - Emergency 4. Impacts	☐ ☐ ☐

REFERENCE: Process Activity Flow Chart	Future Need?	
		Who's Responsiblity: __________ Date Completed: __________

Standard	Explanation	Checklist	Where Are You Now?
4.3.2 **Regulations: Legal and Other Requirements** *Example #3 Apotex Inc. (Page 22)*	**What environmental laws and guidelines affect your business?** These may be federal, provincial and regional/municipal environmental regulations, permits and contracts Does your organization subscribe to industry codes of practice or other voluntary requirements, eg. Voluntary Climate Change, Responsible Care?	**Do procedures exist to identify and access legal requirements? (eg. permits)** **Are you in compliance?** Do procedures exist to identify other requirements to which the organization subscribes? (eg. voluntary preventative approaches) Are reports up to date?	☐ ☐ ☐ ☐
4.3.3 **Objectives and Targets**	**Specific objectives and targets measure your performance in implementing your environmental policy.** Objectives are longer term goals such as: Minimize use of energy/reduce energy consumption 20% annually Minimize water use/ reduce water consumption by 10% annually Targets are shorter term goals such as: we will reduce water consumption in the...?	**Have documented and maintained objectives and targets been established for each relevant function within the organization?** **Have the objectives and targets been developed with reference to legal and other requirements?** Have the objectives and targets been developed formally considering the views of interested parties? Are the objectives and targets consistent with the environmental policy?	☐ ☐ ☐ ☐
4.3.4 **Environmental Management Program**	**The environmental program is the organization's plan and program for reaching its objectives and targets.** This program designates responsibility for achieving the objectives and targets and specifies the means, time frame and resources needed.	**Has an environmental management program been established and maintained?** **Does it designate responsibility for achieving objectives and targets at each relevant function and level of the organization?** Does it include the means by which objectives and targets are to be achieved? Does it include a process for amendment occasioned by new developments or new or modified activities, products and services?	☐ ☐ ☐ ☐

REFERENCE: Regulations List	Future Need?	
		Who's Responsiblity: Date Completed.
REFERENCE: Objectives and Targets	Future Need?	
		Who's Responsiblity: Date Completed:
REFERENCE: EMS Program Components	Future Need?	
		Who's Responsiblity: Date Completed:

Standard	Explanation	Checklist	Where Are You Now?
4.4.1 Structure and Responsibility	**Management is expected to define, document and communicate roles, responsibilities and authorities for personnel within the organization.**	**Have roles, responsibilities and authorities been defined, documented, and communicated?**	☐
	Where activities have, or may have a direct impact on the environment.	Has management provided the necessary human resources and specialized skills to implement and control the environmental management system?	☐
		Has management provided the necessary technology to implement and control the environmental management system?	☐
		Has management provided the necessary financial resources to implement and control the environmental management system?	☐
		Has top management appointed a specific management representative(s) for environmental management?	☐
		Does the management representative have a defined role, and responsibility and authority for ensuring that EMS requirements are established, implemented, and maintained in accordance with this standard?	☐
		Does that management representative have a defined role, and responsibility and authority for reporting on the performance of the EMS to top management as a basis for their review and for improvement of the EMS?	☐

REFERENCE: Structure & Responsibilities	Future Need	
		Who's Responsibility: __________________ Date Completed: __________________

Standard	Explanation	Checklist	Where Are You Now?
4.4.2 **Training**	**Awareness training on the environmental policy, the EMS system and procedures is required for all personnel**.	**Has the organization identified training needs of all personnel whose work may create a significant impact on the environment?**	☐
		Have these personnel been receiving appropriate training?	☐
	As well as training on the actual or potential impact of their activities on the environment, the organization must ensure that personnel associated with activities, products or services with significant aspects are competent to perform these activities.	Have procedures been established and maintained to make employees at each relevant function aware of: - the importance of conformance with the environmental policy and procedures? - the importance of conformance with the EMS requirements? - the significant environmental impacts, actual or potential, of their work activities? - the environmental benefits of improved personal performance? - their roles and responsibilities in achieving conformance with the environmental policy and procedures? - their roles and responsibilities in achieving conformance with the EMS requirements? - the potential consequences of departure from specified operating procedures?	☐
		Can it be demonstrated on the basis of appropriate education, training and/or experience that personnel who perform tasks which can cause significant environmental impact are competent?	
4.4.3 **Communications**	**Communication of relevant information on environmental aspects and EMS is required - between all levels of the organization**	**Has the organization established communication procedures regarding its environmental aspects and EMS for internal communications between various levels and functions of the organization?**	☐
	This should also include consideration of communication to external parties. *(Government and community)*	Has the organization established communication procedures for receiving, documenting, and responding to relevant communications from external interested parties?	☐
		Has the organization considered communicating to external parties on the significant environmental aspects of its activities, products and services?	☐
		Has it recorded its decision?	☐

REFERENCE: Training	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________

REFERENCE: Communications Proceeding	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________

Standard	Explanation	Checklist	Where Are You Now?
4.4..4 **Procedures / General Requirements Documentation**	**Documentation describing the basics of your EMS.** The interaction of its elements and directions to related documentation must be developed.	**Has the organization documented the core elements of its EMS?** Do they cross reference? With what?	☐ ☐
4.4.5 **Documentation Controls**	**Procedures to control documents, their publication, use & disposal.**	**Are procedures in place for periodic review and revision of documents?** Are documents available? Are obsolete documents removed and retained for legal purposes?	☐ ☐ ☐
4.4.6 **Operational Controls** *Example #4 LDL Wood Products (Page 23)* *Example #5 Leader Plating on Plastic Ltd. (Page 23)*	**Have the operations and activities associated with environmental impacts been identified?**	**Has the organization identified those operations and activities that are associated with significant environmental aspects, in line with its policies, objectives and targets?** **Are operational control procedures in place for these operations and activities?** Are these operational control procedures documented? Do these documented procedures address situations where the absence of procedures could lead to deviations from the environmental policy, objectives and targets? Do these documented procedures stipulate operating criteria? Are relevant procedures and requirements communicated to suppliers and contractors? Are the procedures maintained?	☐ ☐ ☐ ☐ ☐ ☐ ☐
4.4.7 **Emergency preparedness and response** *Example #6 Dutch Chemicals (Page 23)*	**Have procedures to identify potential for and response to accidents and emergency situations been identified?** Do all your employees know what to do in the case of an emergency?	**Have procedures been developed to identify the potential for accidents and emergency situations?** Have procedures been developed to respond to these situations? Have procedures been developed to deal with their associated environmental impacts? Does a process exist to review and revise emergency response procedures , during the normal course of events and after an emergency? Does the organization periodically test its procedures?	☐ ☐ ☐ ☐ ☐

REFERENCE: Documented Core Elements	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________
REFERENCE: Documentation Controls	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________
REFERENCE: Operational Controls	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________
REFERENCE: Emergency Preparedness	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________

Standard	Explanation	Checklist	Where Are You Now?
4.5.1 **Monitoring and Measurement** *Example #7* *Macgregors Meat & Seafood* *(Page 23)*	**Procedures for monitoring and measuring key characteristics of its operations that have significant impacts.**	**Has the organization established documented procedures to monitor and measure the key characteristics of its operations that can have a significant impact on the environment?**	☐
		Are these procedures maintained?	☐
		Does the organization record information to track performance?	☐
		Does the organization record information to track operational controls?	☐
		Does the organization record information to track conformance with its objectives and targets?	☐
		Are there documented procedures for calibrating all test equipment?	☐
		Are there documented procedures for retaining records of calibration?	☐
		Are there documented procedures for evaluating compliance with relevant environmental legislation and regulations?	☐
		Are these procedures maintained?	☐
4.5.2 - A **Control of non-compliance**	**Do procedures exist to maintain the integrity of operations that could cause an environmental impact?**	**Do procedures exist for investigating non-conformance with EMS?**	☐
		Do they include identifying the cause of non-conformance?	☐
		Procedures should define responsibility and authority for non-conformance and corrective actions.	☐
4.5.2 - B **Corrective and preventative action**	**Do you have procedures for correcting the root cause of errors?** Procedures that define responsibility and authority for identifying and implementing corrective / preventive actions.	**Has the organization established procedures that define responsibility and authority for:** - **handling and investigating non-conformance?** - **taking action to mitigate the impacts of non-conformance?** - **initiating and completing corrective & preventive action?**	☐
		Does the organization have in place a process for determining that the corrective or preventive action taken is appropriate to the magnitude of the problem and commensurate with the impact?	☐
		Have procedures been developed for implementing and recording changes to procedures required by preventive and corrective actions?	☐

REFERENCE: Monitoring	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________
REFERENCE: Compliance Control	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________
REFERENCE: Corrective and Preventative Action	Future Need?	
		Who's Responsiblity: ____________ Date Completed. ____________

Standard	Explanation	Checklist	Where Are You Now?
4.5.3 **Records**	**Records are the evidence of the ongoing operation of the EMS and may include:** **• training records** **• inspection, maintenance and calibration records** **• incident reports** • records for determination of significant environmental impacts and aspect identification • audit and management review results	**Has the organization established and maintained procedures for the identification, maintenance, and disposition of environmental records?** **Are there training records?** **Are there audit records?** **Are the environmental records identifiable and legible?** Are the environmental records traceable to the activity, product, or service involved? Have record retention times been established and recorded? Has a process been established to ensure that the records kept are appropriate to the system and the organization?	☐ ☐ ☐ ☐ ☐ ☐ ☐
4.5.4 **EMS Audit** *Example #8 Crown, Cork & Seal (Page 23)*	**Is there a program of periodic audits of the EMS?**	**Has the organization established a program and procedures for periodically conducting EMS audits?** Does the audit determine whether or not the EMS conforms to planned arrangements for environmental management, including the requirements of this standard? Is the periodic EMS audit program and its procedures properly implemented and maintained? Are the results of these EMS audits provided to management? Does the EMS audit program include a process to determine schedules based upon the environmental importance of the activity concerned and the results of previous audits? Do the EMS audit procedures cover the scope, frequency, and methodologies used? Do the EMS audit procedures identify responsibilities? Do the EMS audit procedures identify requirements for conducting audits? Do the EMS audit procedures identify requirements for reporting results?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

REFERENCE: Records	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________

REFERENCE: EMS Audit Record	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________

Standard	Explanation	Checklist	Where Are You Now?
4.6 Management Review	**Management reviews and evaluates the EMS at defined intervals to maintain continual improvement, suitability and effectiveness.** The review should include: - results from audits - degree of achievement of targets and objectives - lessons learned - stakeholder concerns	**Does the organization's management periodically review the EMS to ensure its continuing adequacy, suitability and effectiveness?**	☐
		Has management determined the intervals at which it will conduct reviews?	☐
		Is there a process in place to ensure that the necessary information is collected for the review?	☐
		Is the review documented?	☐
		Does the review address the possible need for changes to policy, objectives, and other EMS elements?	☐
		Is the review conducted in light of EMS audit results?	☐
		Is the review conducted in light of changing circumstances?	☐
		Is the review conducted in light of the commitment to continual improvement?	☐

REFERENCE: Management Review Record	Future Need?	
		Who's Responsiblity: ____________ Date Completed: ____________

5. References & Sources of Information

5.1 Case Experiences:

Case examples from the Emery Creek Environmental Association businesses are given to illustrate that companies are taking the initiative to use elements of Environmental Management Systems to remain competitive and to reduce their impact on the environment. Successful companies and trade associations have developed Environmental Management Systems, policies and goals based on pollution prevention and resource conservation to enable their organizations to comply with regulatory requirements and continuously improve their environmental performance.

#1 - Reynolds Aluminum - *Environmental Impact*
The company is dedicated to reducing its impact on the environment. Powder chrome application to sheet aluminum produced water contaminated with heavy metals. Lime and bisulphate treatment was done to precipitate the metal as a sludge and to allow discharge of the treated water to the sewer A new water-based chrome plating system, with water evaporated using infra red followed by water rinse, then an acid wash allows the product to be painted to the customer's specification. This change eliminates contaminated water treatment, thus eliminating the cost of treatment process, chemicals, and sewer charges . There is no need for staff to monitor waste streams. Return on investment was less than one year In addition, water based paints are now used, decreasing VOC's released into the workplace. Reynolds Aluminum recycle all scrap metal and hydraulic fluids, and seeks markets for unused paint, cardboard rolls and plastic film wrap.

#2 - Ontario Store Fixtures - *Solvent Recovery*
Ontario Store Fixtures was the recipient of Ontario Ministry of Environment's 1993 Pollution Prevention Achievement Award for controlling pollution at the source by introducing solvent recovery system, thus reducing purchases of a solvent, emissions to the air, and quantities of hazardous waste. With an annual cost of solvents above $80 000 and hazardous waste bills exceeding $100 000, an on-site distillation unit has been installed with a pay-back of less than 2 years

# 3 - Apotex - *Regulations / Life Cycle Analysis*
Operating with a cradle to grave concept for materials management, the company explored less toxic alternatives to methanol, a regulated substance used as a cleaner in the manufacturing process. Changing to Isopropyl Alcohol (IPA) and hot water washing as cleaning materials, and improving procedures have increased operating efficiencies and reduced the costs of solvent purchases and waste disposal. Sonic baths for cleaning equipment components and use of air spray to speed up the drying processes have also been implemented A review of company procedures and process operations saved time and money and also as improved environmental performance.

#4 - LDL Wood Products - *Practical Operations*
In the production of custom-made wood products such as trophies, plaques, desk accessories, the company has reduced waste costs by switching to returnable drums for sealers and lacquers. Lining spray booths reduced the need for solvents and saved labour and waste disposal.

#5 - Leader Plating on Plastics Ltd - *Operational Controls*
Since 1987, this company has invested $500,000 in environmental technologies, keeping their business competitive and within environmental compliance. Technologies have included caustic soda and soda ash neutralization of acidic waters for discharge into sewers, filtration and dehydration of plating precipitates of copper, nickel and chromium which allows for recycling back to metal producers, and recovery of chromium through pressure evaporators which reduces purchases of chromium from 1500 lbs. per month to 300 lbs. per month.

# 6 - Dutch Chemicals - *Spills Are A Costly Experience That Can Be Prevented.*
Since a costly fine from a spill experience (a valve failed on a caustic soda storage tank and the concrete containment dyke leaked and was directed to the storm sewer) this company developed a Spill Response Plan based on Canadian Standard CAN/C.S.A.-Z731-M91. Outside storage has been eliminated. A formal mandatory employee training program includes proper handling and better understanding of the products.

#7 - MacGregor Meat and Seafood - *Monitoring*
Using CO2 released from dry-ice in freezer operations to neutralize effluents allowed use of an otherwise waste product (CO2) to be used to neutralize caustic cleaning solutions before discharging to sewers. CO2 carries lower maintenance costs since it is less corrosive than the acids used previously.

#8 - Crown Cork and Seal - *Audit Prompts Product Redesign*
An environmental audit was used to implement waste reduction initiatives that led to the redesign of beverage cans, helping to save 300 tonnes per year of aluminum purchases. Crown Cork and Seal is a recipient of the City of North York Environment Award of Excellence and the Canadian Council for Ministers of the Environment Pollution Prevention Award.

# 9 - R. G. Corrugated - *ISO 9000*
The move to register under ISO 9000 has been hastened by customers requesting ISO 9000 from vendors who wish to bid on their contracts. The process was also seen as a means to opening doors to worldwide directories for the company's services. Their success comes from a total commitment by management and every individual worker in the plant. The certification has been well worth the economic investment and personal commitment.

5.2 Resources

1) **Emery Creek Environmental Association (ECEA)**

ECEA operates a Resource Centre for members and businesses in the Emery Creek Industrial Park. Special references include:

- Workshops for implementing EMS / ISO 14001
- Information Resources for EMS and ISO 14000 and ISO 9000
- Ontario Ministry of the Environment - Industrial Sector Guides and ISO 14000 Guides, Evironmental Partnerships Branch.

Members Who Contributed to this Guidance Document

Company	**Address**	**Contact**
Apotex Inc. *(pharmaceuticals)*	4100 Weston Road Toronto, ON M9L 2Y6	John Hollands
Bert Thomas Electric Repair Ltd. *(repairs)*	4801 Steeles Ave. W. Toronto, ON M9L 2W1	Bob Swarbrick
Crown Cork and Seal Canada Inc. *(manufacturing)*	21 Fenmar Drive Toronto, ON M9L 2T9	Jim Armstrong
EnviroTech Associates Inc. *(consulting)*	2345 Wyecroft Road, Unit 7 Oakville, ON L6L 6L8	Henry Vens
Indalloy Division of Caradon Ltd. *(metallurgical)*	7 Alloy Crt. Toronto, ON M9M 3A2	Michael Craig
Macgregors Meat & Seafood *(food processing)*	265 Garyray Drive Toronto, ON M9L 1P2	Jim DeLuca
Ontario Store Fixtures *(manufacturing)*	650 Barmac Drive Toronto, ON M9L 2X8	Chris Lynch
R. G. Corrugated *(packaging)*	867 Fenmar Drive Toronto, ON M9L 1C8	Barb da Rosa
Toronto Works *(municipal government)*	55 John Street Toronto, ON M5V 3C6	Uwe Mader
Tri Krete Ltd. *(construction)*	152 Toryork Drive Toronto, ON M9L 1X6	Tony Santilli
Wood Waste Solutions Canada Inc. *(resource recovery)*	171 Fenmar Drive Toronto, ON M9L 1M7	Janice Wright

2) **Canadian Centre for Pollution Prevention (C2P2)**

C2P2 operates Canada`s pollution prevention resource centre. Specialized information services include:

- 1-800 enquiry line for references and referrals on EMS / ISO 14001.
- Website http://c2p2.sarnia.com linking information resources across Canada and internationally connected to EMS / ISO 14001
- Customized training and conferences for sectors for EMS and ISO 14001, in partnership with Management Horizons.

(Tel: 519-337-3473; Fax: 519-337-3486; E-mail: c2p2@sarnia.com)

3) **Environmental Management Systems References** *(Listing does not endorse products)*

The Canadian Standards Association *(C.S.A., 178 Rexdale Boulevard, Etobicoke, Ontario Canada M9W 1R3. Tel: 416-747-4000)* offers a full range of reference documents for the implementation of EMS and ISO 14000 standards. They include:

• C.S.A. Plus 1117	Competing Leaner, Keener and Greener: A Small Business Guide to ISO 14000
• Z750-94 A	Voluntary Environmental Management System
• Z754-94	Guideline for Pollution Prevention

4) **ISO 14001 References** *(Listing does not endorse products)*

- The Alliance of Manufacturers and Exporters Canada *(75 International Boulevard Toronto, Ontario, M9W 6L9, Tel: 416-798-8000)* have produced a range of guidance documents for small and medium sized enterprises for the implementation of ISO 14001. A recommended reference is 'Essential Steps Towards an Internationally Recognized Environmental Management System'
- ICF Kaiser Inc. offer an ISO 14001 Workstation manual and software for implementation of ISO 14001 similar to the checklist used in this guidance document. View at http://www.icfkaiser.com
- Caribou Systems offer an ISO 14001 Gap Analysis and Environmental Information Management Systems tools available in software form. View at http://www.caribousystems.com or 1-800-281-8391.
- Environmental Software Association Limited offers 13 products which address the following issues: Environmental Health & Safety Auditing, Environmental Data Management. EMS as per 14001 and computer based environmental awareness training programs. Contact 416-516-2337.
- Greenware Environmental Systems offer ISO 14001 Assessment, Implementation and audit software. View at http://www.greenware.ca
- B.R.I. International Inc. and Intelex Technologies Inc. of Toronto offer a cost effective Windows based software for ISO 14001 designed for small to mediums sized companies. Contact 800-661-2948

The Emery Creek Environmental Association offers demonstration of these references or contact the Canadian Centre for Pollution Prevention at 1-800-667-9790 for referral to other resources.

5) **Ontario Ministry of the Environment (MOE)**
MOE website: ene.gov.on.ca

MOE has prepared a number of relevant publication that deal with resource conservation, pollution prevention and environmental management systems. The list includes:

- Guides to Resource Conservation and Cost Savings Opportunities in the following industrial and commercial sectors:
  - Automotive Parts Manufacturing
  - Municipal Water and Wastewater Treatment
  - Meat and Poultry
  - Adhesives, Paints and Coatings
  - Dairy Processing
  - Plastics Processing
  - Plastics Reprocessing
  - Soap, Detergents and Related Products
  - Office Buildings
  - Food Services
  - A Business Guide to Environmental Performance and Competitive Advantage
- Applying Sustainable Development to Business, Realizing the Benefits
- Guides to ISO 14000 Implementation in the following industrial sectors:
  - Automotive Parts Manufacturing
  - Metal Finishing
  - Metal Fabrication
  - Vinyl Processing
  - Corrugated Paper Packaging
- Ontario Progress in Pollution prevention
- Pollution prevention Planning-Guidance Document and Workbook
- A strategy to Fulfill the CCME Commitment to Pollution Prevention
- Environmental Code of Management Practice for Mini-labs
- Metal Finishing Pollution Prevention Guide
- Environmental Code of Management Practice for Laundry Operations
- The Eco-Efficiency Resource Manual
- Pollution Prevention for the Printing and Graphics Sector
- Rethink Pollution Prevention Pays
- Guide to Pollution Prevention for Municipalities (published by the Regional Municipality of Hamilton-Wentworth)
- Ontario Environment Business Directory

These publication may be obtained by contacting Ana Rosati at the following address:

Ministry of the Environment
Environmental Partnerships Branch
2 St. Clair Avenue West
Toronto, Ontario, M4V 1L5

Tel. (416) 327-7721 Fax. (416) 327-1261

5.3 ISO 14000 Standards

What is ISO?

ISO is the Geneva based non-governmental organization that promotes the development and implementation of voluntary international standards. ISO consists of 112 national standards bodies with Canada represented by the Standards Council of Canada (SCC). Notwithstanding their voluntary nature your business may be forced through supply chain / procurement requirements to implement the program. So you need to be ISO 14000 READY!

Why is ISO 14000 being developed?

The primary purpose of these standards is to avoid international trade barriers that will result if conflicting national and regional EMS standards were to continue to develop. Examples of such existing standards are the European Union's Eco-Management and Auditing Scheme, or "EMAS" regulation, and the numerous product eco-labeling regulations, standards and programs that have been established throughout the world. The ISO 14000 standards are also expected to provide a credible alternative to traditional government command and control regulation. And, most importantly, improved environmental protection and performance are expected to result from the successful implementation of ISO 14000.

Who is writing the standards?

ISO Technical Committee (TC) 207 was commissioned in 1993 to develop a series of international environmental management standards. Representatives from over 60 "participating" and several "observer" national delegations, including industry, standards organizations, government and environmental organizations, are involved in drafting and commenting on the standards. Liaisons have also been established with several interested international organizations, including the United Nations Environmental Program (UNEP) and the International Chamber of Commerce.

What will the ISO 14000 series of standards cover?

As of this date, standards are being developed in the following general areas:

- Environmental Management Systems (EMS)
- Environmental Auditing (EA)
- Environmental Labeling (EL)
- Environmental Performance Evaluation (EPE)
- Life Cycle Assessment (LCA)
- Environmental Aspects of Product Standards (EAPS)

How will a company be able to demonstrate conformity to ISO 14001?

A company has two options. It may contract with an accredited registrar whose certified auditors assess and verify that the facility's EMS conforms to ISO 14001. Or, an organization may choose to self-declare its conformity with the standard. It is expected that the marketplace will, for the most part, require independent third-party registration. Many small organizations choose to become ISO 14001 "Ready"; they self declare and then wait until the market tells them whether or not they need to become registered.

Categories of ISO 14000 Standards

ISO 14000
SERIES OF STANDARDS

ISO 14010 Series
Guidance Document
Environmental Auditing

ISO 14030 Series
Guidance Document
Environmental Performance Evaluation

ISO 14001 *
Environmental Management Systems

Specification for Certification

ISO 14020 Series
Guidance Document
Environmental Labeling

ISO 14040 Series
Guidance Document
Life Cycle Assessment Standards

ISO 14060 Series
Guidance Document
Environmental Aspects in Product Standard

** Focus of this Guidance Document is to assist in preparation for ISO 14001.*

What steps are required to get ISO 14001 registration?

- Make the decision to implement EMS then certify.
- Use outside help to ensure systems are adequate.
- Select a certification registrar.

Descriptive representation between ISO 9000 and ISO 14001

ISO 9000: 1994		*ISO 14001*		*Your EMS*
Description	*Element*	*Element*	*Description*	
Management responsibility				
Quality policy	*4.1.1*	*4.2*	*Environmental Policy*	
	-	*4.3.1*	*Environmental aspects*	
	-	*4.3.2*	*Legal and other requirements*	
	-	*4.3.3*	*Objectives and targets*	
	-	*4.3.4*	*Environmental management program*	
Organization	*4.1.2*	*4.4.1*	*Structure and responsibility*	
Management review	*4.1.3*	*4.6*	*Management review*	
Quality system				
General	*4.2.1*	*4.1*	*General requirements*	
	4.2.1	*4.4.4*	*Environmental management documentation*	
Quality system procedures	*4.2.2*	*4.4.6*	*Operational control*	
Quality planning	*4.2.3*	-		
Contract review	*4.3*	*4.4.6*	*Operational control*	
Design control	*4.4*	*4.4.6*	*Operational Control*	
Document and data control	*4.5*	*4.4.5*	*Document control*	
Purchasing	*4.6*	*4.4.6*	*Operational control*	
Control of customer supplied product	*4.7*	*4.4.6*	*Operational control*	
Product identification and traceability	*4.8*	-		
Process control	*4.9*	*4.4.6*	*Operational control*	
Inspection and testing	*4.10*	*4.5.1*	*Monitoring & Measurement*	
Control of inspection, measuring & test equipment	*4.11*	*4.5.1*	*Monitoring & Measurement*	
Inspection and test status	*4.12*	-		
Control of non conforming product	*4.13*	*4.5.2*	*Non conformance & corrective & preventive action*	
Corrective and preventive action	*4.14*	*4.5.2*	*Non conformance & corrective preventive action*	
	-	*4.47*	*Emergency preparedness & response*	
Handling, storage, packing, preservation and delivery	*4.15*	*4.4.6*	*Operational control*	
Control of quality records	*4.16*	*4.5.3*	*Records*	
Internal quality audits	*4.17*	*4.5.4*	*Environmental management system audit*	
Training	*4.18*	*4.4.2*	*Training, awareness and competence*	
Servicing	*4.19*	*4.4.6*	*Operational control*	
Statistical techniques	*4.20*	-		
	-	*4.3.3*	*Communications*	

5.4 Examples of Management Performance Indicators[1]

Using Performance Indicators will allow a company to measure its progress, and help to communicate its success. The following list of indicators offers a selection for a company to use in their EMS / ISO 14001. Pick out the ones important to your EMS.

Organization:

- *number of pollution prevention initiatives implemented*
- *number of levels of management with specific environmental responsibilities*
- *number of employees that have environmental requirements in their job descriptions*
- *number of employees participating in environmental programs (e.g.., suggestion, recycle, cleanup initiatives, reward and recognition, or others)*
- *number of employees trained versus the number that need training*
- *number of contracted individuals trained*

Management Systems:

The conformity of management systems with requirements or expectations;

- *degree of compliance with regulations*
- *degree of compliance with regulations by contracted service providers*
- *time required to respond to or correct environmental incidents*
- *number of resolved and unresolved corrective actions*
- *number of or costs attributable to fines and penalties*
- *number and frequency of specific activities (e.g.., audits)*
- *number of audits completed versus planned*
- *number of audit findings per period*
- *frequency of review of operating procedures*
- *number of emergency drills conducted*
- *percentage of emergency preparedness and response drills demonstrating planned readiness*

Environmental / Financial:

The relationship of environmental performance to financial performance;

- *costs (operational and capital) that are associated with a product's or process' environmental aspects*
- *return on investment for environmental improvement projects*
- *savings achieved through reductions in resource usage, prevention of pollution or waste recycling*
- *sales revenue attributable to a new product or a by-product designed to meet environmental performance or design objectives*
- *research and development funds applied to projects with environmental significance*
- *environmental liabilities that may have a material impact on the financial status of the organization*

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[1] Source: Draft ISO 14031 Environmental Performance Evaluation Annex A

Local Community / Environmental Issues

Programs in local communities with respect to environmental issues;

- *number of inquiries or comments about environmentally related matters*
- *number of press reports on the organization's environmental performance*
- *number of environmental educational programs or materials provided for the community*
- *resources applied to support of community environmental programs*
- *number of sites with environmental reports*
- *number of sites with wildlife programs*
- *progress on local remediation activities*
- *number of local cleanup or recycling initiatives, sponsored or self-implemented*
- *favourability ratings from community surveys*

Materials Management:

The materials used in operations;

- *quantity of materials used per unit of product*
- *quantity of processed, recycled or reused materials used*
- *quantity of packaged materials discarded or reused per unit of product*
- *quantity of auxiliary materials recycled or reused*
- *quantity of raw materials reused in the production process*
- *quantity of water per unit of product*
- *quantity of water reused*
- *quantity of hazardous materials used in the production process*

Energy Management:

The total energy or the types of energy used by, or the energy efficiency of, the organization's operations;

- *quantity of energy used per year or per unit of product*
- *quantity of energy used per service or customer*
- *quantity of each type of energy used*
- *quantity of energy generated with by-products or process streams*
- *quantity of energy units saved due to energy conservation programs*

Services:

The services (e.g., cleaning and janitorial services, maintenance of systems and equipment, transportation and delivery services, information and communications, security, food and catering, grounds keeping and waste disposal) supporting the operations;

- *amount of hazardous materials used by contracted service providers*
- *amount of cleaning agents used by contracted service providers*
- *amount of recyclable and reusable materials used by contracted service providers*
- *amount or type of wastes generated by contracted service providers*

Facilities / Equipment:

The physical facilities and equipment, and the supply and delivery to them.

- *average fuel consumption of vehicle fleet*
- *number of freight deliveries by mode of transportation per day*
- *total land area used for production purposes*
- *number of vehicles in fleet with pollution abatement technology*
- *number of business trips saved through other means of communication*
- *number of business trips by mode of transportation*
- *land area used to produce a unit of energy*

Products:

The products or by-products (e.g.., materials other than main products, including recyclable and reusable waste materials, that are generated and retained for further commercial purposes);

- *number of products introduced in the market with reduced hazardous properties*
- *number of products which can be reused or recycled*
- *rate of defective products*
- *number of units of by-products generated per unit of product*
- *number of units of energy consumed during use of product*
- *duration of product use*
- *number of products with instructions regarding environmentally safe use & disposal*

Wastes:

The wastes generated by operations;

- *quantity of waste per year or per unit of product*
- *quantity of hazardous, recyclable or reusable waste produced per year*
- *total waste for disposal*
- *quantity of waste stored on site*
- *quantity of waste controlled by permits*
- *quantity of waste converted to reusable materials per year*

Emissions:

The emissions to air from operations;

- *quantity of specific emissions per year*
- *quantity of specific emissions per unit of product*
- *quantity of waste energy released to air*
- *ozone depletion potential of air emissions*
- *global warming potential of air emissions*

Units of Measure:

- *Use units (such as kWh/year) consistent with production/operational efficiency controls so that environmental monitoring is integrated with operational business systems.*

5.5 Glossary of Acronyms

ANSI	American National Standards Institute
C2P2	Canadian Centre for Pollution Prevention
CMA	Chemical Manufacturers Association
CSA	Canadian Standards Association
CWA	Clean Water Act
EA	Environmental Auditors
EL	Environmental Labeling
EHS	Environment, Health and Safety
EMAS	Eco-Management and Audit Scheme
EMS	Environmental Management System
EPA	(Also USEPA) U.S. Environmental Protection Agency
EPE	Environmental Performance Evaluation
ICC	International Chamber of Commerce
ISO	International Organization for Standardization
SCC	Standards Council of Canada
TC 207	Technical Committee 207 (of ISO)
UNEP	United Nations Environmental Program
VOC's	Volatile Organic Compounds

This is a sample "Generic Environmental Policy" that companies may use to assist them in formulating their own.

Sample Environmental Policy

With this declaration ______________________ publicly recognizes and commits to conducting its business in full awareness of its obligations to the Environment. The company understands that it must provide a positive attitude towards compliance of regulatory requirements that govern its industry, minimize the risks to any adverse effects from its operations and share this responsibility of stewardship with its employees, customers, shareholders and the community. In recognition of this responsibility the company will:

1. endeavor to ensure that familiarity with industry standards and compliance with all pertinent federal, provincial and municipal regulatory requirements.
2. encourage suppliers, agents and distributors to pursue sound environmental practices and programs.
3. ensure that all employees are aware of their environmental responsibilities and that they are appropriately trained, involved and motivated.
4. minimize environmental, health and safety risks, conserve energy and natural resources, minimize waste of all kinds.
5. commit sufficient resources to allow for the proper implementation of efforts and programs to achieve environmental goals.

We wish to promote and challenge everyone in this global community to join us and adopt these statements as basic elements of their responsibility to their respective community and our planet.

____________________________ President

____________________ Date

NOTES